

WHAT IS CLAIMED IS:

1. A drive assembly for a printhead, comprising:
  - at least two spaced rollers, at least one of which is a driven roller;
  - an endless drive belt loop connected between said at least two spaced rollers for rotation thereabout to define an endless loop drive path;
  - a drive mechanism that drives the endless drive belt loop in at least a first direction;
  - a printhead assembly including at least one printhead and carriage operably connected to the endless drive belt loop for movement therewith;
  - a guide assembly that constrains movement of the printhead assembly, the guide assembly being configured to allow movement of the printhead around both linear and arcuate portions of the endless loop drive path; and
  - a controller that controls the drive assembly to traverse the printhead assembly over at least one-half the length of the endless drive belt loop to advance the printhead across a linear print zone and an arcuate non-print zone with a predetermined drive profile.
2. The drive assembly according to claim 1, wherein the controller controls the drive assembly to rotate the printhead assembly in a unidirectional endless loop mode in which at least one full revolution of the endless loop drive path is traversed by the printhead assembly.
3. The drive assembly according to claim 2, wherein the controller controls the drive assembly to advance the printhead assembly across the linear print zone at a substantially constant velocity.
4. The drive assembly according to claim 3, wherein the controller controls the drive assembly to advance the printhead assembly across the arcuate non-print zone at the same substantially constant velocity.
5. The drive assembly according to claim 1, wherein the endless loop drive path consists of two linear print zones and two arcuate non-print zones defined by one-half the circumference of the spaced rollers.
6. The drive assembly according to claim 5, wherein the spaced rollers have a radius  $R$  of between about 15 and 50 mm to define a turnaround zone of length  $\pi R$ .

7. The drive assembly according to claim 1, wherein the at least one printhead includes at least two printheads diametrically opposed to one another on the endless loop drive path.

8. The drive assembly according to claim 1, wherein the guide assembly constrains movement of the printhead assembly in at least the linear print zone.

9. The drive assembly according to claim 1, wherein the controller controls the drive mechanism to also operate in a second direction opposite the first direction.

10. A printer comprising the drive assembly of claim 1 and an indexing mechanism to advance a recording medium past the printhead.

11. A printer having an endless loop drive path, comprising:  
a drive assembly including  
at least two spaced rollers, at least one of which is a driven roller;  
an endless drive belt loop connected between said at least two spaced rollers for rotation thereabout to define an endless loop drive path;  
a drive mechanism that drives the endless drive belt loop in at least a first direction;  
a printhead assembly including at least one printhead and carriage operably connected to the endless drive belt loop for movement therewith;  
a guide assembly that constrains movement of the printhead assembly, the guide assembly being configured to allow movement of the printhead around both linear and arcuate portions of the endless loop drive path;  
an indexing mechanism to advance a recording medium past the printhead;  
and

a controller that controls the drive assembly to traverse the printhead assembly over at least one-half the length of the endless drive belt loop to advance the printhead across a linear print zone and an arcuate non-print zone with a predetermined drive profile and controls the indexing mechanism to advance the recording medium while the printhead is in the arcuate non-print zone.

12. The printer according to claim 11, wherein the controller controls the drive assembly to rotate the printhead assembly in a unidirectional endless loop mode in which at least one full revolution of the endless loop drive path is traversed by the printhead assembly.

13. The printer according to claim 12, wherein the controller controls the drive assembly to advance the printhead assembly across the linear print zone at a substantially constant velocity.

14. The printer according to claim 13, wherein the controller controls the drive assembly to advance the printhead assembly across the arcuate non-print zone at the same substantially constant velocity.

15. The printer according to claim 11, wherein the endless loop drive path consists of two linear print zones and two arcuate non-print zones defined by one-half the circumference of the spaced rollers, the printhead having a print swath of a width  $S$  measured transverse to the first direction, and the two linear print zones being separated by a spacing  $S_N$ , where  $N$  is an integer multiple of  $S$ .

16. The printer according to claim 11, wherein the at least one printhead includes at least two printheads diametrically opposed to one another on the endless loop drive path.

17. The printer according to claim 16, wherein the at least two printheads operate simultaneously to provide two offset print swaths separated by a predefined spacing.

18. The printer according to claim 16, wherein the indexing mechanism advances the recording medium in a path in a direction transverse to the first direction and through a center of the endless loop drive path and the at least two printheads each face toward the recording medium so as to be capable of simultaneous both side printing.

19. The printer according to claim 11, wherein the guide assembly constrains movement of the printhead assembly in at least the linear print zone.

20. The printer according to claim 11, wherein the controller controls the drive mechanism to also operate in a second direction opposite the first direction.

21. The printer according to claim 11, further comprising a duplexer that reverses an orientation of the recording medium so that both sides of the recording medium can be printed.

22. A printer having an endless loop drive path, comprising:  
a drive assembly including

at least two spaced rollers, at least one of which is a driven roller;

an endless drive belt loop connected between said at least two spaced rollers for rotation thereabout to define an endless loop drive path;

a drive mechanism that drives the endless drive belt loop in at least a first direction;

a printhead assembly including at least two printheads and carriages operably connected to the endless drive belt loop for movement therewith, the at least two printheads being diametrically opposed to one another on the endless loop drive path;

a guide assembly that constrains movement of the printhead assembly, the guide assembly being configured to allow movement of the printhead around both linear and arcuate portions of the endless loop drive path;

an indexing mechanism to advance the recording medium in a path in a direction transverse to the first direction and through a center of the endless loop drive path; and

a controller that controls the drive assembly to traverse the printhead assembly over at least one-half the length of the endless drive belt loop to advance the printhead across a linear print zone and an arcuate non-print zone with a predetermined drive profile and controls the indexing mechanism to advance the recording medium while the printhead is in the arcuate non-print zone,

wherein the at least two printheads each face toward the recording medium so as to be capable of simultaneous both side printing.